

CHARLES F. BOSWORTH.

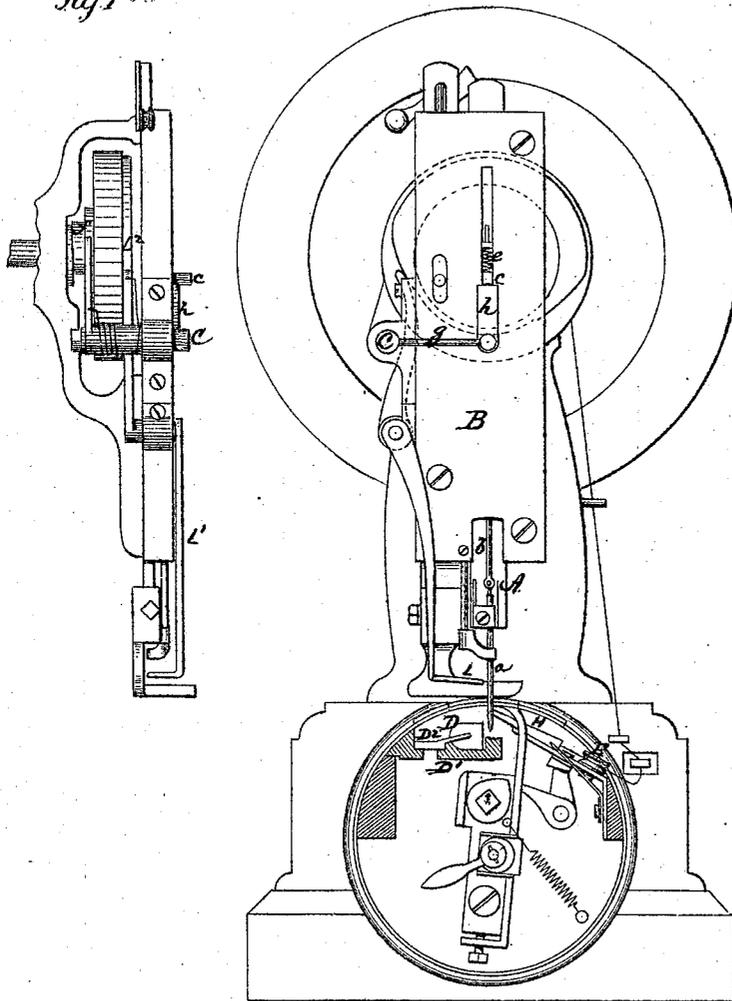
Improvement in Sewing Machines.

No. 122,555.

Patented Jan. 9, 1872.

fig. 1

fig. 1^a



Witnesses:

J. H. Sumner
A. J. Rabbit

Charles F. Bosworth
 Inventor
 By his Atty.

Thos. E. Gault

CHARLES F. BOSWORTH:

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Fig. 5

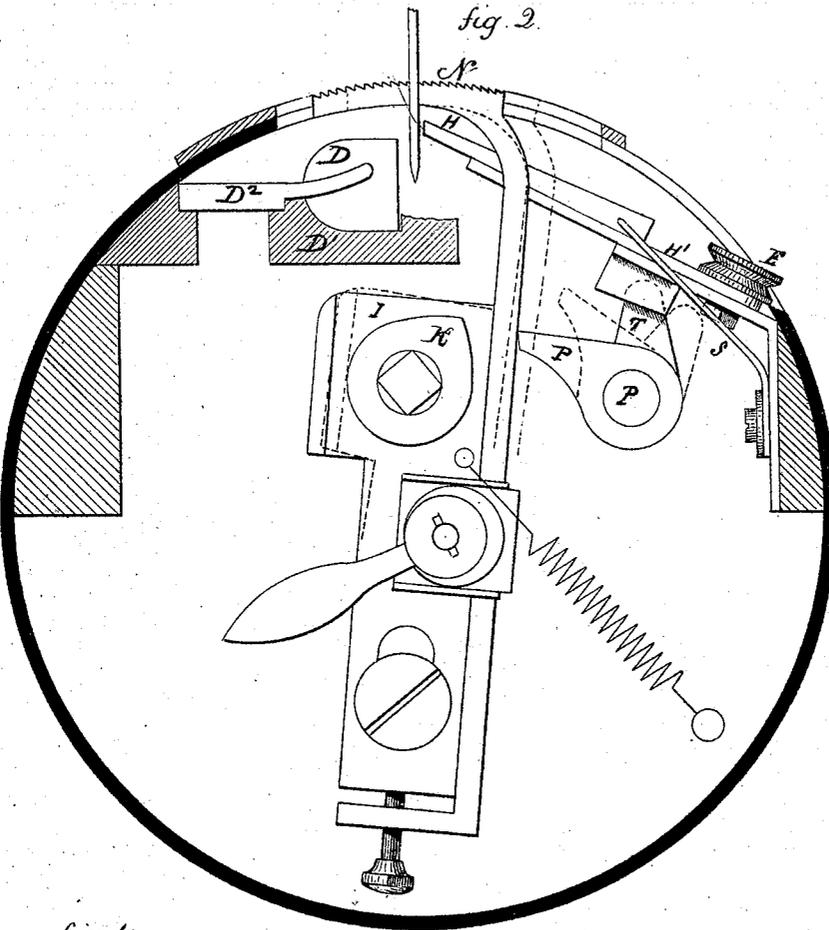


fig. 2

fig. 6



fig. 4

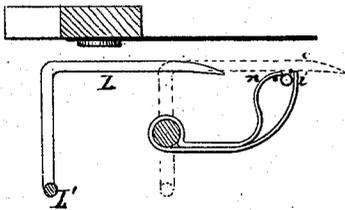
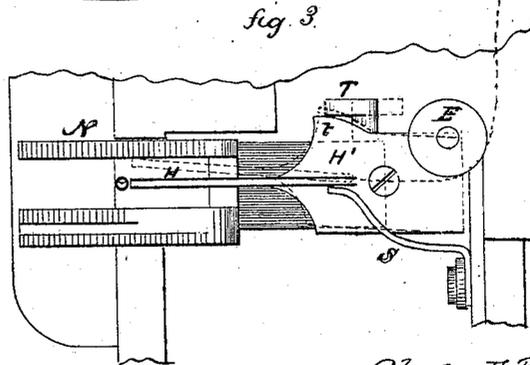


fig. 3



Witnesses:

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UNITED STATES PATENT OFFICE.

CHARLES F. BOSWORTH, OF MILFORD, CONNECTICUT.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 122,555, dated January 9, 1872.

To all whom it may concern:

Be it known that I, CHARLES F. BOSWORTH, of Milford, in the county of New Haven and State of Connecticut, have invented a new Improvement in Sewing-Machines; and I do hereby declare the following, when taken in connection with the accompanying drawing and letters of reference marked thereon to be a full, clear, and exact description of the same, and which said drawing constitutes a part of this specification, and represents in—

Figure 1, a front and end view; Fig. 1^a, a partial side view; Fig. 2, a sectional view of the work-arm, showing the mechanism within the arm; Fig. 3, a top view of the mechanism, the work-plate removed; Fig. 4, a sectional view above the work-plate; and Figs. 5 and 6, vertical sections of the needle.

This invention relates to an improvement in that class of sewing-machines especially designed for the sewing of straw braid, or for other purposes where it is desirable to expose a short stitch upon the outside, the object of the invention being to make an alternately long and short stitch, the short stitch appearing upon one side, and the long stitch upon the other side—such machines commonly employing two threads, carried by an eye-pointed needle and shuttle.

This invention consists chiefly in combining a shuttle or equivalent mechanism carrying one thread with a needle carrying a second thread, when the said needle is provided with a mechanism for taking and releasing its own thread for the different stitches, as more fully hereinafter described.

I represent the mechanism as arranged for a cylinder machine—that is to say, a machine in which the work table is of a cylindrical form.

The needle *a* is arranged in the needle-bar *A* working in a vertical guide or head, *B*, to which a reciprocating movement is given in substantially the usual manner. The needle *a*, as shown enlarged in Figs. 5 and 6, is made of tubular form down to the eye, or may be grooved to receive a rod or piston, *d*, which, when raised, as in Fig. 5, opens the eye to one side to form practically a barbed needle, but when the piston is down, as in Fig. 6, the open side of the eye is closed, forming practically an eye-pointed needle. The piston is operated by a connect-

ing-rod, *b*, extending up through the head *B*, and working with the needle-bar *A* protruding through the head in the form of an arm, *c*. A spring, *e*, serves to force the piston down and hold it in position, closing the eye, as seen in Fig. 6. To raise the piston a cam, *f*, on the driving-shaft actuates a rock-shaft, *C*, from which an arm, *g*, extends to a slide, *h*, operating beneath the arm *c*, so that the needle-bar moving carries with it the piston, but at the required time the slide *h* rises beneath the arm *c* in advance of the rising needle-bar so as to raise the piston to open the eye. This opening occurs at the time the needle commences to rise, and the slide *h* ceases its action so soon as the needle eye has risen above the shuttle. Instead of this particular needle and cast-off I may use any well-known needle and cast-off. *D* is the shuttle working in a race, *D*¹, and driven from the operative mechanism of the machine by a carrier, *D*², in the usual manner. The needle thread is run around a pulley, *E*, through a tube, *H*, arranged beneath the work-plate, as seen in Fig. 1, and more clearly in Figs. 2 and 3. This tube lying directly in the line of the needle presents the thread to the needle as it stands in its down position, and the piston being raised to open the eye will leave the thread in the open eye; the piston closing the eye retains the thread in that position and rises, carrying the needle threaded up through the fabric. (This is supposing the needle to have previously passed down through the fabric.) The fabric is then fed in the usual manner for a short stitch, and the needle again descends through the fabric, carrying its own thread in the usual manner, for the eye-pointed needle. This thread is then taken by the shuttle and interlaced with the shuttle thread in the usual manner. Were the needle-thread tube *H* to remain in the position above named the needle would again take that thread up through the work. Before the needle descends a hook or thread-holder, *L*, on a lever, *L*¹, actuated by a cam, *L*², is thrown forward, and passes between the loop brought up through by the needle, as denoted in broken lines, Fig. 4. To insure the needle entering the loop two fingers, *i* *n*, (see Fig. 4,) are arranged in such proximity to the needle that the one, *i*, throws one side of the loop back, and the other, *n*, the other side for-

ward, as seen in Fig. 4, thus opening the loop for the hook to enter. The thread held up by this hook L, the needle passes down on a single branch or portion of its own thread in the same manner as if the needle-thread were entirely above the work, as in the usual manner. This single thread which the needle carries down is taken by the shuttle as in other shuttle machines, and when so taken the hook L withdraws, which gives for the passage of the shuttle the loop of thread formed by retaining the loop upon the hook as the needle descended. This operation also relieves the thread from friction of drawing up the stitch, drawing over the hook instead of over the braid. The needle again ascends, and, were the thread-carrier H to remain in the position first described, the needle would again take its own thread up through the fabric as before. To prevent this the thread-carrier H is arranged upon a plate, H', to which a movement is given as hereinafter described before the needle rises, to take the carrier H out of the path of the needle, as denoted in broken lines, Fig. 3; consequently, the eye of the needle being open as before, the needle rises without its thread. The feed occurs, moving the fabric, leaving both the shuttle-thread and needle-thread to appear upon the under side. Again the needle descends, and takes its own thread as before, and forms a stitch, no thread appearing upon the upper surface between the first and third stitch, and so continuing, each alternate stitch of a single thread appearing upon the surface.

In straw work, for which this invention is especially designed, it is desirable that the stitch which appears upon top should be short, while the under stitch is longer. To do this alternate feed of different length is necessary, and this I accomplish in the following manner:

N is the feed attached to a vibrating arm I, which is actuated by a cam, K, in the usual manner for sewing-machine feeds. On a shaft, P, is arranged a stop, P', against which the feed strikes to arrest its backward movement, as denoted in Fig. 2, it there being represented as in the position preparatory to making the short feed. To the shaft P a movement is im-

parted from the mechanism of the machine at each alternate stitch, which raises the stop P', as denoted in broken lines, thus allowing the feed to fall farther back; consequently, when the feed is thus allowed to fall farther back its next movement will be just so much longer, and this long feed occurs while the needle is up without its thread. At the next stitch, when the needle takes up its thread, the stop again comes down, causing a short feed, and so continuing, long and short.

As the long feed occurs at the time that the needle-thread is not required, I take advantage of this fact to operate the needle thread-carrier H, and upon the shaft P I arrange a cam, T, which, as the stop P' is thrown down, strikes a projection, t, on the plate H' and throws the carrier into line with the needle, and when the stop is thrown up for the long feed the carrier is thrown back by a spring, S, or its equivalent.

I claim as my invention—

1. The combination of a shuttle or equivalent mechanism carrying one thread, and a hooked or barbed needle with a mechanism to cause the said needle to take or release a second or needle-thread, substantially as described.

2. In combination with the subject-matter of the first clause of claim, I claim the hook L, substantially as and for the purpose set forth.

3. In combination with the subject-matter of the first clause of claim, I claim the hook L and fingers *in* to open the loop for the insertion of the said hook, substantially as set forth.

4. In combination with a needle carrying its own thread and a mechanism to engage the said thread upon the reverse side of the work, I claim the hook L, arranged to operate substantially as described.

5. In combination with the subject-matter of the fourth clause of claim, I claim the fingers *in* to open the loop for insertion of the said hook, substantially as set forth.

CHARLES F. BOSWORTH.

Witnesses:

A. J. TIBBITS,
J. H. SHUMWAY.

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